

Complete the following exam before the end of the class session. Follow all directions carefully and place all answers in your bluebook. You may use scratch paper if necessary, and please ensure all answers are clearly marked/readable.

I. Indicate whether the following arguments are deductive or inductive. If an argument is deductive, then evaluate it for validity and soundness. If an argument is inductive, then evaluate it for strength and cogency. If you are unable to determine an answer, briefly explain why. (6 points each)

1. Since Santa Cruz, CA is north of Canada and south of Mexico, it follows that Canada is south of Mexico.
2. The sign at the entrance to campus indicates that this university is named "University of Florida." Therefore, this logic course is being held in Florida.

II. Indicate whether the following statements are true or false. (2 points each)

1. Questions, commands, and exclamations are three types of statements.
2. A geometric proof is an example of an inductive argument.
3. An argument may be both valid and unsound.
4. An argument may be both sound and invalid.
5. It is possible for two statements to be both equivalent and inconsistent.
6. All statements are either tautologies, self-contradictions, or contingent statements.
7. In a valid argument, the premises must be true.
8. If two statements are consistent, then they are both true.
9. If an argument has contradictory premises, then the argument is valid.
10. Any argument with a necessarily true conclusion is deductively valid, regardless of its premises.

III. Translate the following English statements into logical notation. (3 points each)

1. The Christian ideal has not been tried and found wanting; it has been found difficult and left untried. (G.K. Chesterton)
2. Democracy means government by discussion, but it is effective only if you can stop people talking. (Clement Richard Attlee)
3. Computers are everywhere and you can't even begin to function with a computer unless you have comprehension and an understanding of the English language. (Wally Amos)
4. We neither get better nor worse as we get older, but more like ourselves

(Robert Anthony)

5. High humidity and low barometric pressure are necessary conditions for it to either rain or sleet.

6. There will be peace on Earth if and only if there is goodwill towards men and people love their neighbors as themselves.

IV. Determine the truth value of the following compound statement, assuming the following truth values: A=T, B=T, C=F. Please show your work. (10 points)

$$\sim\{A \supset [(\sim B \vee \sim C) \equiv A]\} \supset \sim B$$

V. Using a complete truth table, determine whether each of the following two statements is a tautology, a self-contradiction, or a contingent statement. (5 points each) Then check to see whether the two statements are equivalent, contradictory, and consistent or inconsistent. Be sure to indicate what feature(s) of your truth tables determines your answers. (10 points)

$$(P \supset Q) \supset (P \bullet Q) \quad \text{-and-} \quad (P \vee Q) \equiv \sim(\sim P \bullet \sim Q)$$

VI. Using a complete truth table, determine whether the following argument is valid or invalid. Indicate what feature of your truth table determines your answer. (10 points)

$$\begin{array}{l} P \supset Q \\ Q \equiv R \quad // \quad (R \bullet Q) \supset P \end{array}$$

VII. Using the shortened/indirect truth table method, determine whether the following argument is valid or invalid. Indicate what feature of your shortened truth table determines your answer. (10 points)

$$\begin{array}{l} V \supset (W \vee X) \\ X \supset (Y \bullet Z) \\ \sim W \quad // \quad V \supset \sim Z \end{array}$$